

WHAT IS CLAIMED IS:

1. A method of transmitting information having at least first data and second data in a mobile communication system, comprising the steps of:

5 separating the information into the first data and the second data in the form of a first data stream with a first predetermined length and a second data stream with a second predetermined length, respectively;

generating first and second code symbol sequences by encoding the first and second data streams at a predetermined code rate;

10 repeating one of the first and second code symbol sequences with a higher priority level and puncturing the other code symbol sequence with a lower priority level, the number of repeated code symbols being equal to the number of punctured code symbols; and

15 serially concatenating the repeated code symbol sequence and the punctured code symbol sequence.

2. The method of claim 1, wherein the separating step further comprises the steps of:

determining whether the information is intra-media data; and

20 separating the information into at least two data streams by priority level if the information is intra-media data.

3. The method of claim 1, wherein if the information is inter-media data, the data streams are separated by priority level when separating the
25 information.

4. The method of claim 1, wherein the code symbol sequences are generated in data blocks of lengths determined according to a characteristic of each code symbol sequence and an available data rate on a radio channel.

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5. The method of claim 4, wherein if the data blocks are less than a data block size available at the data rate, redundancy is added to the data blocks.

6. The method of claim 5, wherein the redundancy-added data blocks are repeated and punctured including the redundancy.

7. A method of simultaneously transmitting data having the same or different priority levels to a mobile station in a mobile communication system, comprising the steps of:

10 classifying transmission data streams by priority level and separating each transmission data stream into data streams of predetermined lengths according to characteristics of the data streams;

segmenting the separated data streams according to a data rate;

15 encoding the segmented data at a predetermined code rate, repeating code symbol sequences with higher priority levels, and puncturing code symbol sequences with lower priority levels, the number of repeated code symbols being equal to the number of punctured code symbols; and

serially concatenating the repeated and punctured code symbol sequences.

20 8. The method of claim 7, wherein if the transmission data stream is an intra-media stream, the transmission data stream is separated into at least two data streams by priority level.

9. The method of claim 7, wherein the code symbol sequences are 25 distinguishably generated in data blocks of the size determined according to a characteristic of each stream and an available data rate transmittable on a radio channel.

10. The method of claim 9, wherein if the data blocks are shorter 30 than lengths provided by the data rate, redundancy is added to the data blocks.

11. The method of claim 10, wherein the redundancy-added data blocks are repeated or punctured including the redundancy .

5 12. An apparatus for simultaneously transmitting data with the same or different priority levels in a mobile communication system, comprising:

a radio link protocol (RLP) portion for classifying transmission data streams by priority level and separating each transmission data stream into data streams of predetermined lengths according to characteristics and a data rate of
10 the data streams;

a multiplexer (MUX) for segmenting the separated data streams according to the data rate;

a plurality of multiple quality control (MQC) channels for encoding the segmented data at a predetermined code rate, repeating code symbol sequences
15 with higher priority levels, and puncturing code symbol sequences with lower priority levels, the number of repeated code symbols being equal to the number of punctured code symbols; and

a serial concatenator for serially concatenating the repeated and punctured code symbol sequences.

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13. The apparatus of claim 12, wherein each of the MQC channels comprises:

a channel encoder for encoding the segmented data at the predetermined code rate; and

25 a quality matcher (QM) for repeating the code symbol sequences with the higher priority levels and puncturing the code symbol sequences with the lower priority levels.

14. The apparatus of claim 13, wherein the code symbol sequences
30 are generated in data blocks of lengths determined according to a characteristic

of each code symbol sequence and an available data rate on a radio channel.

15. The apparatus of claim 14, further comprising a redundancy selector in each MQC channel, for adding redundancy to the data blocks if the
5 data blocks are shorter than lengths provided by the data rate.

16. The apparatus of claim 13, wherein the channel encoders are turbo encoders.

10 17. The apparatus of claim 12, wherein further comprises a data rate control unit for determining the data rate based on the data rate information received from a mobile station which the mobile station may receive and then providing the determined data rate with the radio link protocol.